

लोक सेवा आयोग
नेपाल विविध सेवा, राजपत्रांकित प्रथम श्रेणी, सूचना प्रविधि विज्ञ पद को खुला र आन्तरिक प्रतियोगितात्मक
लिखित परीक्षाको पाठ्यक्रम

द्वितीय पत्र :- सेवा सम्बन्धी प्राविधिक विषय

1. Introduction

- 1.1 General concept of IT planning
- 1.2 Importance of IT in national development
- 1.3 Social and cultural aspects of IT
- 1.4 Global information superhighway

2. Software Engineering

- 2.1 Software development life cycle
- 2.2 Software process model
- 2.3 Software project management
- 2.4 Requirement analysis & requirement engineering
- 2.5 Business process re-engineering
- 2.6 System, data and process modeling
- 2.7 Software testing
- 2.8 Software quality assurance, validation & verification
- 2.9 Software quality standards: ISO, SEI, CASE Tools
- 2.10 Software cost estimation

3. Computer Architecture & Organization

- 3.1 Instruction set architecture.
- 3.2 CPU design and architecture.
- 3.3 Memory hierarchy.
- 3.4 Input / Output system.
- 3.5 CISC vs. RISC

4. Operating Systems

- 4.1 Components of the Operating Systems
- 4.2 Processes
- 4.3 IPC and deadlocks
- 4.4 Memory management
- 4.5 Input / Output and files
- 4.6 Scheduling
- 4.7 Different types of OS (UNIX, LINUX, WINDOWS)
- 4.8 Distributed Operating System
- 4.9 Security issues

5. Information Systems

- 5.1 Information systems fundamentals
- 5.2 Information system development
- 5.3 Decision support system
- 5.4 ERP, CRM and SRM
- 5.5 Management Information System (MIS)
 - 5.5.1 MIS & its importance in organization
 - 5.5.2 Information technology infrastructure
 - 5.5.3 Application of MIS
 - 5.5.4 Ethical & social impact of IS

6. Computer Networks

- 6.1 Network fundamentals
- 6.2 OSI model
- 6.3 Network protocols
- 6.4 TCP / IP services (DNS, SMTP, FTP, DHCP, etc)
- 6.5 Network infrastructures (LAN and WAN including IEEE 802. standards)
- 6.6 VAN and remote access
- 6.7 Internet and WWW
- 6.8 Distributed system
- 6.9 Privacy and security issues

7. Database Management System

- 7.1 Database model
- 7.2 SQL
- 7.3 Functional dependency
- 7.4 Database design
- 7.5 Transaction management and concurrency control
- 7.6 Query processing and optimization
- 7.7 Normalization
- 7.8 DBSC architecture
- 7.9 Basic concept of major DBSC products (Oracle, DB2, Sybase, MSSQL server, etc)

8. IT Strategy

- 8.1 Strategic use of IT
- 8.2 Porter 5 Forces model
- 8.3 Formulating long-term objectives
 - 8.3.1 Long-term objectives
 - 8.3.2 Generic strategies
 - 8.3.3 The value disciplines
 - 8.3.2 Grand strategies
- 8.4 Strategic analysis and choices
- 8.5 Value chain analysis
- 8.6 SWOT analysis
- 8.7 Core competencies
- 8.8 Strategy control and continuous improvement
- 8.9 Strategy implementation

9. E-Commerce Technology

- 9.1 Introduction to E-Commerce
- 9.2 Business models of E-Commerce
- 9.3 Electronic data interchange
- 9.4 Mobile commerce
- 9.5 Technology for online business
- 9.6 Business applications of E-Commerce
- 9.7 Electronic payment system
- 9.8 Security issues of E-Commerce
- 9.9 PKI and digital signature
- 9.10 Encryption and decryption methods

10. E-Government

- 10.1 E-government model
- 10.2 Managing E-government
- 10.3 E-Government readiness
- 10.4 E-Government infrastructure development
- 10.5 Security for E-Government
- 10.6 E-Government strategy
- 10.7 Managing public data
- 10.8 Emerging issues of E-Government
- 10.9 Implementing E-Government
 - 10.9.1 E-Government system life cycle and project assessment
 - 10.9.2 Analysis of current reality
 - 10.9.3 Design of new E-Government system
 - 10.9.4 E-Government risk assessment and mitigation
 - 10.9.5 E-Government system construction implementation and beyond
- 10.10 Nepalese E-Government initiative and E-Government master plan of Nepal
- 10.11 Government enterprise architecture and government portal
- 10.12 Government integrated data center
- 10.13 Disaster recovery center
- 10.13 Focal agencies for E-Government (NITC, HLCIT, OCCA, etc)

11. Data warehouse & data mining

- 11.1 Data warehousing
 - 11.1.1 Need for data warehousing, trends in data warehousing
 - 11.1.2 Planning and requirement
 - 11.1.3 Architecture, infrastructure and metadata
 - 11.1.4 Data design and representation (principals of dimensional modeling, data extraction, transformation and loading, data quality)
 - 11.1.5 Information access and delivery (matching information to classes of users, OLAP in data warehousing, DW and web)
 - 11.1.6 Implementation and maintenance (Physical design process, DW development, growth and maintenance)
- 11.2 Data mining
 - 11.2.1 Data mining algorithms: Classification, clustering, association rules
 - 11.2.2 Knowledge discovery: KDD process
 - 11.2.3 Web mining: Web content mining, web structure mining, web using mining
 - 11.2.4 Spatial and temporal mining
 - 11.2.5 Visualization

12. Project Management

- 12.1 Requirement engineering.
- 12.2 PERT / CPM network.
- 12.3 Investment analysis and breakeven analysis.
- 12.4 Time value of money.
- 12.5 Financial analysis.
- 12.6 Configuration management.
- 12.8 Team building approach.
- 12.9 Issue tracking and management.

13. Software Architecture

- 13.1 Introduction to software architecture
 - 13.1.1 Architecture in the system development life-cycles; architectural dimensions; physical versus logical architecture
- 13.2 Architectural view types and styles
 - 13.2.1 Module viewpoints and styles, component and connector viewpoints and styles, allocation viewpoints and styles, architectures pattern and frameworks
- 13.3 Application architecture
 - 13.3.1 Centralized vs. distributed architectures; distributed architectures including client server, peer to peer and push
- 13.4 Data architecture
 - 13.4.1 Centralized vs. distributed database, relational vs. object oriented databases
- 13.5 Middleware technology
 - 13.5.1 Remote procedure calls; object middleware including DCOM and CORBA; message oriented middleware
- 13.6 Web based architecture
 - 13.6.1 Enterprise java beans architecture; Microsoft Dot Net architecture; Service Oriented Architecture (SOA)
- 13.7 Other architecture
 - 13.7.1 Product line architecture; enterprise application integration architecture